



PES, PADS, and you

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1 November 2001

Joint Physics Group meeting



PES Banks

- **PESD**
 - **Raw PES information**
 - **Location & ADC counts**
- **PlugStrips**
 - **“PESE” information**
 - **Location, counts, corrected energy**
- **PesCluster**
 - **1d cluster of up to 9 PlugStrips**
- **Pes2dCluster**
 - **2d cluster of one u and one v layer 1d cluster**
- **PESQ**
 - **Pes PAD**
 - **Location, corrected energy**



PESD vs PlugStrips

- Your big question should be, “Why does the PESQ contain the corrected energy and not the raw ADC counts?”
- Answer: Too much database access. These constants won't change over time for a given run, but may change from run to run. Don't want to have that much DB thrashing for every user's analysis job!



PESQ threshold?

- Your next question should be, “what is the energy threshold to make a PESQ bank”
- Answer: None. All PlugStrips are made into PESQ banks. Why? Because this is (in theory) a pedestal-free detector, any energy deposited in the PES is real energy. We still have to study this, but single strips are likely MIPs racing through.
- ☞ However! There are already hooks in the code to allow a run-time threshold to be set.



PESQ Compression?

- Next question: Is there any compression in the PESQ?
- Answer: Not at present. Now, we simply make a PESQ StorableObject for each and every strip that has energy in it.
- If we instead do a sort of “pre-cluster” where we write out the address, followed by the number of contiguous strips with non-zero energy, followed by the energy on each of those strips, we can get a compression of almost 50%.
 - ☞ I estimate about a week’s worth of time to get this done. (Hard part is uncompressing, not compressing...) Right now, I don’t have that week.

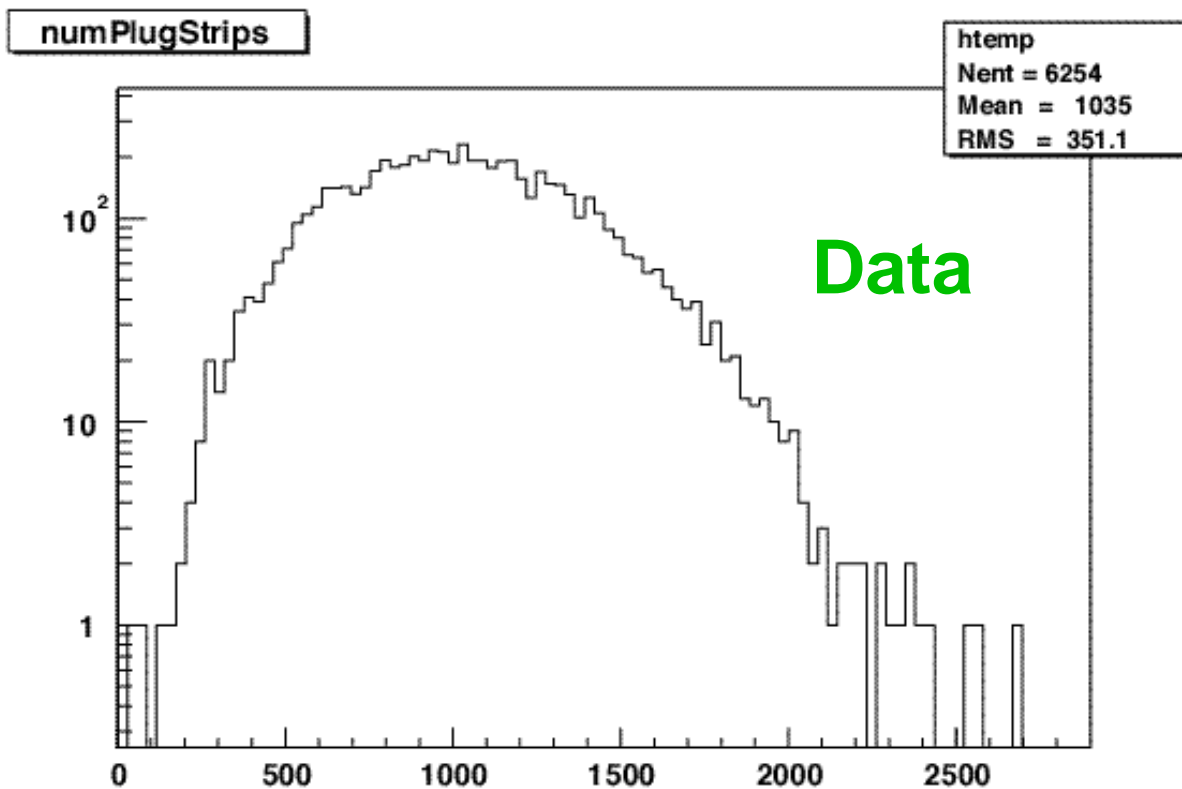
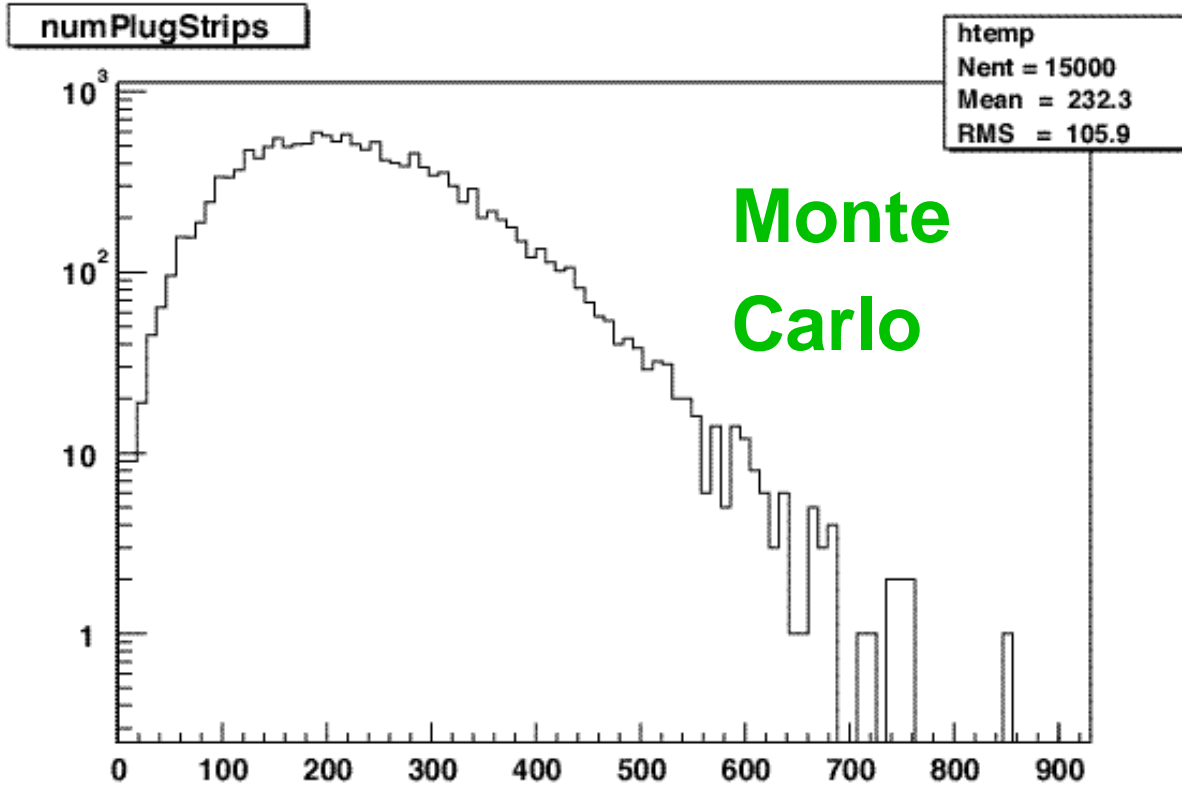


PESQ Size?

- Finally, you're probably asking, "So, Benn, how big are these things?"
- Answer: Monte Carlo studies show (*with no compression*) 1.5 kB/event for top events, 300 B/event with a threshold of 20 counts and 2.4 kB/events for W events.
- However! Random physics run (126859) is 9.3 kB/event, Z sample is 12.8 kB/event and minBias run (125746) is 5.1 kB/event. Why? A glance at *any* counting distribution shows **FIVE** times as many strips and clusters in the data as in the Monte Carlo. Further, it's not a lot of low energy stuff. I am investigating...

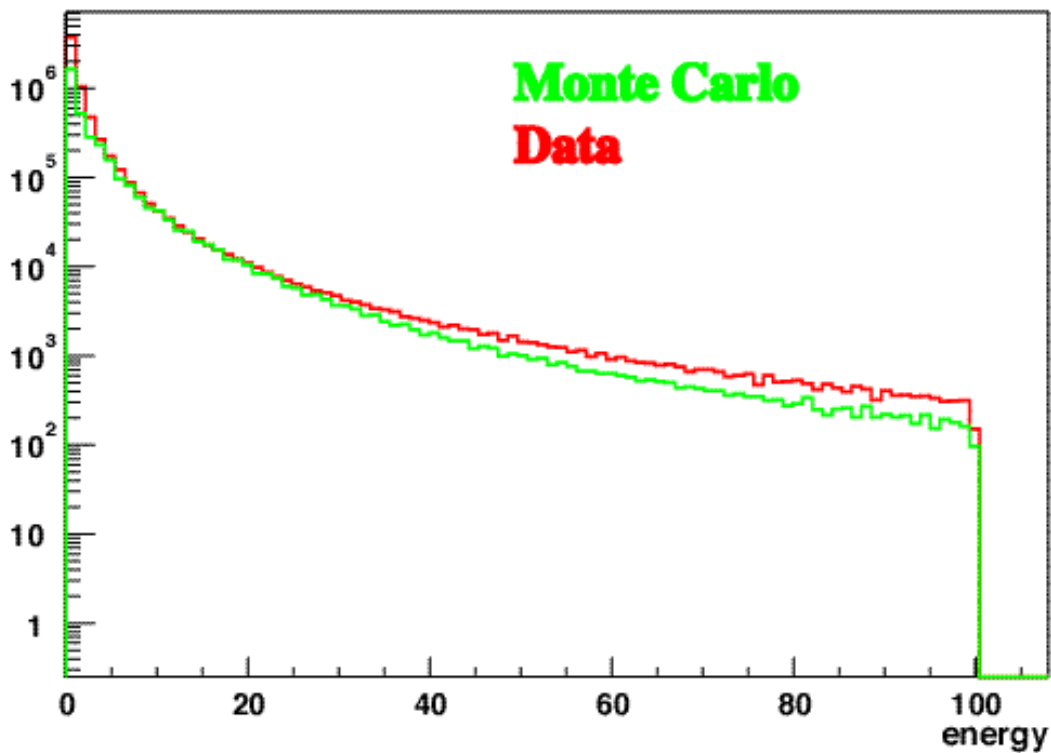
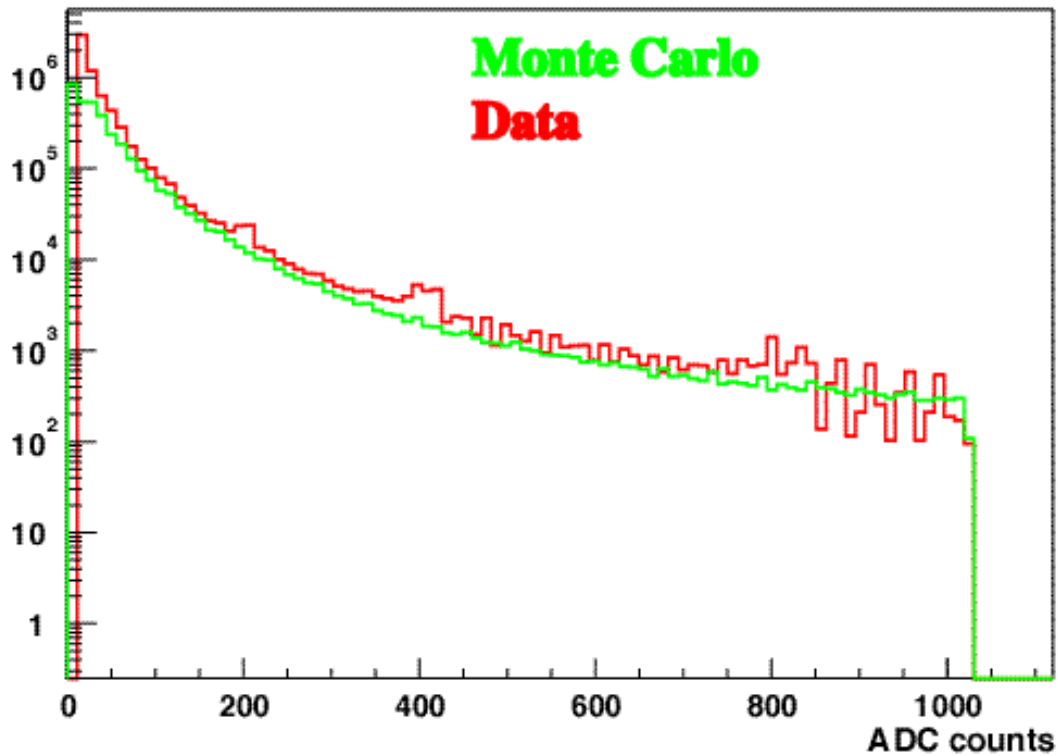


Compare occupancy for MC and Data





More MC/Data Comparisons





Testing....

- **The existing PESQ code has been tested, in that we can write out PESQ StorableObjects and read them back in with no errors.**
- **Clearly need to extensively test any implemented compression algorithms**



Conclusions

- PESQ exist and function
- No threshold (and none wanted!)
- No compression yet
- Size was larger than expected, but is coming down
- Once compression implemented (iff needed), will test....